

High Temperature Digital Mass Flow Controller

SEC-8000F Series

Digital/Analog communication model

SEC-8000D Series

DeviceNet™ communication model

SEC-8000E Series

EtherCAT® communication model

◆ Digital control circuit is incorporated into high temperature model.

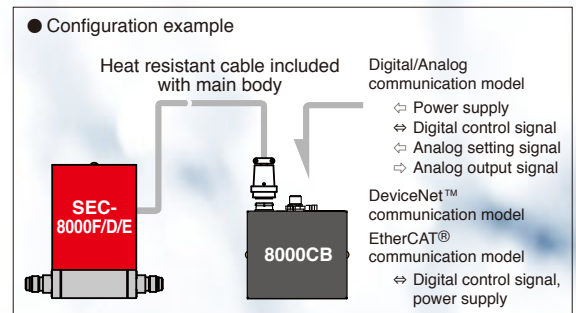
- High accuracy ±1.0% S.P. (Set point) guaranteed
- High-speed response Within 1 second (T98) Variable PID is incorporated
- High temperature model Extensive model lineup for operating temperature

◆ Digital network realized and highly-sophisticated fluid control system available set up

- Intelligent gas panel has been established.
- Simple gas panel has been established by reducing wiring.

◆ Polished surface

◆ RoHS directive compliant model



● Digital/Analog communication models

MODEL	Mass flow controller	SEC-8440F	SEC-8450F	SEC-8455F	SEC-8460F	SEC-8470F	SEC-8440F	SEC-8450F	SEC-8455F	SEC-8460F	SEC-8470F
	Mass flow meter	SEF-8440F	SEF-8450F	SEF-8455F	SEF-8460F	SEF-8470F	SEF-8440F	SEF-8450F	SEF-8455F	SEF-8460F	SEF-8470F

● DeviceNet™ communication models

MODEL	Mass flow controller	SEC-8440D	SEC-8450D	SEC-8455D	SEC-8460D	SEC-8470D	SEC-8440D	SEC-8450D	SEC-8455D	SEC-8460D	SEC-8470D
	Mass flow meter	SEF-8440D	SEF-8450D	SEF-8455D	SEF-8460D	SEF-8470D	SEF-8440D	SEF-8450D	SEF-8455D	SEF-8460D	SEF-8470D

● EtherCAT® communication models

MODEL	Mass flow controller	SEC-8440E	SEC-8450E	SEC-8455E	SEC-8460E	SEC-8470E	SEC-8440E	SEC-8450E	SEC-8455E	SEC-8460E	SEC-8470E
	Mass flow meter	SEF-8440E	SEF-8450E	SEF-8455E	SEF-8460E	SEF-8470E	SEF-8440E	SEF-8450E	SEF-8455E	SEF-8460E	SEF-8470E

Wetted materials	316L Stainless Steel					316L Stainless Steel (Polished surface)	316L Stainless Steel				316L Stainless Steel (Polished surface)
Valve Type	Normally open					Normally close	Normally open				Normally close
Full-scale flow rate (N: conversion flow rate)	5/10/20/30 50/100/200 300/500 SCCM 1/2 SLM	3/5/10 SLM	10/20 SLM	20/30/ 50 SLM	100 SLM	5/10/20/30 50/100/200 300/500 SCCM 1/2/3/5 SLM	10/20 SLM	30/50 SLM	50/100 SLM	150 SLM	
Flow rate control range	2-100% of F.S.										
Flow rate measuring range(SEF)	0-100% of F.S.										
Response	≤1 second										
Accuracy *1	±1.0% S.P. (Flow rate > 30% F.S.), ±0.3% F.S. (Flow rate ≤ 30% F.S.)										
Linearity	≤ ±0.5% F.S.										
Repeatability	≤ ±0.2% F.S.					≤ ±0.3% F.S.	≤ ±0.2% F.S.				≤ ±0.3% F.S.
Operating differential pressure *2	50-300kPa(d)	100-300kPa(d)		20/30 SLM 100-300kPa(d) 50 SLM 150-300kPa(d)	100-300kPa(d)	50-300kPa(d)	100-300kPa(d)	30 SLM 100-300kPa(d) 50 SLM 150-300kPa(d)	50 SLM 100-300kPa(d) 100 SLM 150-300kPa(d)	100-300kPa(d)	
Operating differential pressure(SEF)	≤ 300kPa(d)										
Pressure resistance	1000kPa(g)										
Leak integrity	≤ 5 × 10 ⁻¹³ Pa · m ³ /s(He)										
Operating temperature(Sensor unit)	HL: 80-100°C HM: 100-120°C					AMB: 15-35°C MM: 35-60°C MH: 60-80°C					
Operating temperature(Amp unit)	5-45°C										
Standard fitting *3	1/4 inch VCR equivalent			3/8 inch VCR equivalent	1/2 inch VCR equivalent 3/4 inch VCR equivalent	1/4 inch VCR equivalent			3/8 inch VCR equivalent	1/2 inch VCR equivalent 3/4 inch VCR equivalent	
Mounting orientation	Free										

● Digital/Analog communication models

Flow rate setting signal	0.1 to 5 V DC (input impedance 1MΩ or higher)/2 to 100% F.S.
Flow rate output signal	0 to 5 V DC (minimum load resistance 2kΩ)/0 to 100% F.S.
Digital interface	With address function: RS-485 (transmission speed 38400bps), F-Net Protocol
Power supply	+15VDC ±5% 150mA, -15VDC ±5% 150mA

● DeviceNet™ communication models

Digital interface	DeviceNet™ Protocol
Power supply	Conforming to ODVA standards, DC 24V, 4.0VA

● EtherCAT® communication models

Digital interface	EtherCAT® Protocol
Power supply	24VDC ±4V, 6.8VA

*1: "Accuracy" is guaranteed within ±2°C at the center of operating temperature of sensor unit. *2: Operating pressure may change depending on use conditions. Contact us separately.
*3: SEC(F)-8440F/D/E is compatible with an integrated gas system fitting. (Option) - SCCM and SLM are notations indicating the gas flow rate (mL/min, L/min, at 0°C and 101.3kPa).

Dimensions

SEC/SEF-8000F/D/E (Sensor unit)

*1 SEC/SEF-8460F/D/E : 4-M8

8000CB (Amp unit)

(DeviceNet™ communication model
Please contact HORIBA Digital/Analog communication model)
EtherCAT® communication model

Model	H	T	W	I (1/4" VCR)	I (1/4" Swagelok)	I (3/8" VCR)	I (3/8" Swagelok)	I (1/2" VCR)	A	B	C	D	E
SEC/SEF-8440F/D/E	120.5	32	76	124	127	—	—	—	19	38.1	6.75	18.5	12.7
SEC/SEF-8450F/D/E	127	32	108	156	159	—	—	—	20.2	67.7	3.7	24.6	14.6 inner; 12 outer
SEC/SEF-8455F/D/E	150	50	108	156	159	160	163	—	20.1	67.7	12.7	24.6	14.6 inner; 12 outer
SEC/SEF-8460F/D/E	150	80	125	172	172	177	179	—	37.5	50	15	50	20
SEC/SEF-8470F/D/E	132.8	49	92.4	—	—	—	—	150.4	See the drawing.				22

IMS The HORIBA Group adopts IMS (Integrated Management System) which integrates Quality Management System ISO9001, Environmental Management System ISO14001, and Occupational Health and Safety Management System OHSAS18001. We have now integrated Business Continuity Management System ISO22301 in order to provide our products and services in a stable manner, even in emergencies.

Applying to the EU RoHS Directive : This products is compliant with the restriction of the designated 6 hazardous substances(*).
 (*) lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE)
Using lead-free soldering : Lead-free soldering is used for mounting components of printed circuit boards.
 - Many countries consider the reinforcement of regulations concerning the risk caused by lead to human body and the environment

- The contents of this catalog are subject to change without prior notice, and without any subsequent liability to this company.
- It is strictly forbidden to copy the content of this catalog in part or in full.
- All brand names, product names and service names in this catalog are trademarks or registered trademarks of their respective companies.

HORIBASTECH
 HORIBA STEC, Co., Ltd.

<http://www.horiba.com/horiba-stec/>

Please read the operation manual before using this product to ensure safe and proper handling of the product.

HEAD OFFICE
 11-5, Hokotate-cho, Kamitoba, Minami-ku, Kyoto, 601-8116 Japan
 PHONE: (81)75-693-2312 FAX: (81)75-693-2331

U.S.A.
HORIBA Instruments Incorporated
Sunnyvale Head Office (Technology Center)
 PHONE: (1)408-730-4772 FAX: (1)408-730-8975
Austin Office
 PHONE: (1)512-836-9560 FAX: (1)512-836-8054
Portland Office
 PHONE: (1)503-624-9767 FAX: (1)503-968-3236
Reno Office (R&D Center)
 PHONE: (1)775-358-2332 FAX: (1)775-358-0434
Albany Office
 PHONE: (1)518-331-1371

SINGAPORE
HORIBA Instruments (Singapore) Pte Ltd.
 PHONE: (65)6-745-8300 FAX: (65)6-745-8155
KOREA
HORIBA STEC KOREA, Ltd.
 PHONE: (82)31-8025-6500 FAX: (82)31-8025-6599
TAIWAN
HORIBA Taiwan, Inc.
 PHONE: (886)3-560-0606 FAX: (886)3-560-0550
Tainan Office
 PHONE: (886)6-583-4592 FAX: (886)6-583-2409

CHINA
HORIBA (China) Trading Co., Ltd.
Beijing office
 PHONE: (86)10 85679966 FAX: (86)10 85679066
Shanghai office
 PHONE: (86)21 62896060 FAX: (86)21 62895553
Shanghai service center
 PHONE: (86)21 51371750 FAX: (86)21 51371660
Chengdu office
 PHONE: (86)18583234999
Xi'an office
 PHONE: (86)029 88868480 FAX: (86)029 88868481
Shenzhen office
 PHONE: (86)13602530661

U.K.
HORIBA UK Ltd. Northampton office
 PHONE: (44)1604 542600 FAX: (44)1604 542696
FRANCE
HORIBA UK Ltd. Grenoble office
 PHONE: (33)4 76 42 07 58
THE NETHERLANDS
HORIBA UK Ltd. Nijmegen office
 PHONE: (31)24 301 0235
GERMANY
HORIBA Europe GmbH
 PHONE: (49)351/889 68 07

SE8-CE

Printed in Japan 1707IG13